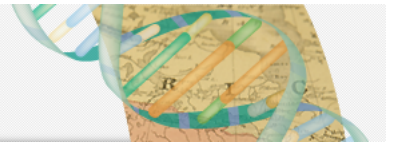


GROWING A NATION

THE STORY OF AMERICAN AGRICULTURE



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Historical Timeline — Farm Machinery & Technology

⇒ 17th-18th Centuries

18th century

Oxen and horses for power, crude wooden plows, all sowing by hand, cultivating by hoe, hay and grain cutting with sickle, and threshing with flail

1790s

Cradle and scythe introduced; invention of cotton gin (1793); Thomas Jefferson's plow with moldboard of least resistance tested (1794)

1793

Eli Whitney invents the cotton gin, which contributes to the success of cotton as a Southern cash crop

1797

Charles Newbold patents first cast-iron plow



⇒ 1800

1801

Thomas Moore of Maryland invents the icebox refrigerator

1819

Jethro Wood patents iron plow with interchangeable parts

1819-25

U.S. food canning industry established



⇒ 1820

1830

About 250-300 labor-hours required to produce 100 bushels (5 acres) of wheat with walking plow, brush harrow, hand broadcast of seed, sickle, and flail

1834

McCormick reaper patented; John Lane manufactures plows faced with steel saw blades

1837

John Deere and Leonard Andrus begin manufacturing steel plows; practical threshing machine patented

⇒ 1840

1840s

Factory-made agricultural machinery increases farmers' need for cash and encourages commercial farming

1841

Practical grain drill patented

1842

First grain elevator, Buffalo, NY

1843

Sir John Lawes founded the commercial fertilizer industry by developing a process for making superphosphate

1844

Practical mowing machine patented

1847

Irrigation begun in Utah

1849

Mixed chemical fertilizers sold commercially

1850

About 75-90 labor-hours required to produce 100 bushels (2 ½ acres) of corn with walking plow, harrow, and hand planting

1850-70

Expanded market for agricultural products spurs adoption of improved technology resulting increases in farm production

1854

Self-governing windmill perfected

1856

Two-horse straddle-row cultivator patented

1858

Mason jars, used for home canning, were invented

⇒ **1860****1862-75**

Change from hand power to horses characterizes the first American agricultural revolution

1865-75

Gang plows and sulky plows come into use

1868

Steam tractors are tried out

1869

Spring-tooth harrow for seedbed preparation appears

1870s

Silos and deep-well drilling come into use

1874

Glidden barbed wire patented; fencing of rangeland ends era of unrestricted, open-range grazing

⇒ **1880****1880**

William Deering puts 3,000 twine binders on the market

1881

Hybridized corn produced

1884-90

Horse-drawn combine used in Pacific coast wheat areas

1888

The first long haul shipment of a refrigerated freight car was made from California to New York

1890-95

Cream separators come into wide use

1890-99

Average annual consumption of commercial fertilizer; 1,845,900 tons

1890s

Agriculture becomes increasingly mechanized and commercialized

1890

40-50 labor-hours required to produce 100 bushels (5 acres) of wheat with gang plow, seeder, harrow, binder, thresher, wagons, and horses; 35-40 labor-hours required to produce 100 bushels (2 1/2 acres) of corn with 2-bottom gang plow, disk and peg-tooth harrow, and 2-row planter

1892

The first gasoline tractor was built by John Froelich

⇒ **1900****1900-09**

Average annual consumption of commercial fertilizer 3,738,300 tons

1900-10

George Washington Carver of Tuskegee Institute finds new uses for peanuts, sweet potatoes, and soybeans, helping to diversify southern agriculture

1905

The first business devoted exclusively to making tractors is established



⇒ 1910

1910-19

Commercial fertilizer use: 6,116,700 tons/year

1910-15

Big open-g geared gas tractors introduced in areas of extensive farming

1915-20

Enclosed gears developed for tractor

1918

Small prairie-type combine with auxiliary engine introduced

⇒ 1920

1920-29

Commercial fertilizer use: 6,845,800 tons/year

1920-40

Farm production gradually grows from expanded use of mechanized power

1926

Cotton-stripper developed for High Plains; successful light tractors developed

1928

Otto Rohwedder introduced his bread-slicing machine

⇒ 1930

1930-39

Commercial fertilizer use: 6,599,913 tons/year

1930s

All-purpose, rubber-tired tractor with complementary machinery popularized

1930

One farmer supplies, on average, 9.8 in the United States and abroad; 15-20 labor-hours required to produce 100 bushels (2 1/2 acres) of corn with 2-bottom gang plow, 7-foot tandem disk, 4-section harrow, 2-row planters, cultivators, and pickers; 15-20 labor-hours required to produce 100 bushels (5 acres) of wheat with 3-bottom gang plow, tractor, 10-foot tandem disk, harrow, 12-foot combine, and trucks

⇒ 1940

1940-49

Commercial fertilizer use: 13,590,466 tons/year

1940

One farmer supplies 10.7 persons (est.)

1941-45

Frozen foods popularized

1942

Spindle cottonpicker produced commercially

1945-70

Change from horses to tractors and increasing technological practices characterize the second American agricultural revolution; productivity per acre begins sharp rise

1945

10-14 labor-hours required to produce 100 bushels (2 acres) of corn with tractor, 3-bottom plow, 10-foot tandem disk, 4-section harrow, 4-row planters and cultivators, and 2-row picker; 42 labor-hours required to produce 100 pounds (2/5 acre) of lint cotton with 2 mules, 1-row plow, 1-row cultivator, hand hoe, and hand pick

⇒ 1950

1950-59

Commercial fertilizer use: 22,340,666 tons/year

1950

One farmer supplies 15.5 persons (est.)

1951

Organic chemicals called chelates are found to help protect plants against certain metal deficiencies

1954

Number of tractors on farms exceeds the number horses and mules for the first time

1955

6 1/2 labor-hours required to produce 100 bushels (4 acres) of wheat with tractor, 10- foot plow, 12-foot row weeder, harrow, 14-foot drill, self-propelled combine and trucks.

Late 1950s

Anhydrous ammonia increasingly used as cheap source of nitrogen, boosting yields

1959

Mechanical tomato harvester developed

➔ **1960****1960-69**

Commercial fertilizer use: 32,373,713 tons/year

1960

One farmer supplies 25.8 persons (est.)

1965

5 labor-hours required to produce 100 pounds (1/5 acre) of lint cotton with tractor, 2-row stalk cutter, 14-foot disk, 4-row bedder, planter, cultivator, and 2-row harvester

5 labor-hours required to produce 100 bushels (3 acres) of wheat with tractor, 12- foot plow, 14-foot drill, 14-foot self-propelled combine, and trucks; 99% of sugar beets harvested mechanically; Federal loans and grants for water/sewer systems

1968

96% of cotton harvested mechanically

➔ **1970****1970-79**

Commercial fertilizer use: 43,643,700 tons/year

1970s

No-tillage agriculture popularized

1970

One farmer supplies 47.7 persons (est.)

1975

2-3 labor-hours required to produce 100 pounds (1/5 acre) of lint cotton with tractor, 2-row stalk cutter, 20-foot disk, 4-row bedder and planter, 4-row cultivator with herbicide applicator, and 2-row harvester

3-3/4 labor-hours required to produce 100 bushels (3 acres) of wheat with tractor, 30-foot sweep disk, 27-foot drill, 22-foot self-propelled combine, and trucks; 3-1/3 labor-hours required to produce 100 bushels (1 1/8 acres) of corn with tractor, 5-bottom plow, 20-foot tandem disk, planter, 20-foot herbicide applicator, 12-foot self-propelled combine, and trucks

➔ **1980****1980-89**

Commercial fertilizer use: 47,411,166 tons/year

1980s

More farmers use no-till or low-till methods to curb erosion

1980

One farmer supplies 75.7 persons (est.)

1987

1-1/2 to 2 labor-hours required to produce 100 pounds (1/5 acre) of lint cotton with tractor, 4-row stalk cutter, 20-foot disk, 6-row bedder and planter, 6-row cultivator with herbicide applicator, and 4-row harvester

3 labor-hours required to produce 100 bushels (3 acres) of wheat with tractor, 35-foot sweep disk, 30-foot drill, 25-foot self-propelled combine, and trucks; 2-3/4 labor-hours required to produce 100 bushels (1 1/8 acres) of corn with tractor, 5-bottom plow, 20-foot tandem disk, planter, 20-foot herbicide applicator, 12-foot self-propelled combine, and trucks

1989

After several slow years, the sale of farm equipment rebounds; more farmers begin to use low-input sustainable agriculture (LISA) techniques to reduce chemical applications

➔ **1990-2000****1990**

One farmer supplies 100 persons (est.)

1990s

Information technology and precision techniques increasingly used in agriculture

1994

Farmers begin using satellite technology to track and plan their farming practices. The user of conservation tillage methods, which leave crop residues in the field to combat erosion, continues to rise. FDA grants first approval for a whole food produced through biotechnology, the FLAVRS AVR™ tomato. Farm Bureau celebrates its 75th anniversary. U.S. Congress approves General Agreement on Tariffs and Trade (GATT), helping liberalize world trade

1997

The first weed and insect—resistant biotech crops—soybeans and cotton—are available commercially

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